

What is claimed is:

1. A PWM motor driving device that controls an amount of electric power supplied to a motor by controlling an ON/OFF duty factor of an output transistor connected between a power source and the motor, comprising:

5 phase detecting means for detecting, among a plurality of phases of the motor, a phase which is currently being driven by the output transistor; and saturation preventing means for performing control according to a voltage of the phase detected by the phase detecting means in such a way that the output transistor is not saturated.

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2. A PWM motor driving device comprising:

an upper output transistor connected between a higher-voltage side of a power source and a motor;

15 a lower output transistor connected between a lower-voltage side of the power source and the motor;

switching means for switching the upper and lower output transistors between ON and OFF according to a signal representing a rotational position of the motor;

20 controlling means for controlling an amount of electric power supplied from the power source to the motor by controlling an ON/OFF duty factor of the upper output transistor according to a torque control signal;

upper saturation preventing means for individually limiting voltages of a plurality of phases of the motor below a level above which the upper output transistor is saturated;

lower phase detecting means for detecting, among the plurality of phases of the motor, the phase which is currently being driven by the lower output transistor; and

lower saturation preventing means for limiting the voltage of the phase detected by the lower phase detecting means above a level below which the lower output transistor is saturated.

3. A PWM motor driving device as claimed in claim 2,

wherein the level below which the voltages of the individual phases of the motor are limited by the upper saturation preventing means and the level above which the voltage of the phase detected by the lower phase detecting means is limited by the lower saturation preventing means vary according to the torque control signal.

4. A PWM motor driving device as claimed in claim 2,

wherein the upper and lower output transistors are bipolar transistors, the upper saturation preventing means is so configured as to control a base current of the upper output transistor in such a way that the voltages of the individual phases of the motor are limited below the level above which the upper output transistor is saturated, and the lower saturation preventing means is so configured as to control a base current of the lower output transistor in such a way that the voltage of the phase detected by the lower phase detecting means is limited above the level below which the lower output transistor is saturated

5. A PWM motor driving device comprising:

an upper output transistor connected between a higher-voltage side of a power source and a motor;

5 a lower output transistor connected between a lower-voltage side of the power source and the motor;

10 switching means for switching the upper and lower output transistors between ON and OFF according to a signal representing a rotational position of the motor;

controlling means for controlling an amount of electric power supplied from the power source to the motor by controlling an ON/OFF duty factor of the lower output transistor according to a torque control signal;

15 lower saturation preventing means for individually limiting voltages of a plurality of phases of the motor above a level below which the lower output transistor is saturated;

20 upper phase detecting means for detecting, among the plurality of phases of the motor, the phase which is currently being driven by the upper output transistor; and

upper saturation preventing means for limiting the voltage of the phase detected by the upper phase detecting means below a level above which the upper output transistor is saturated.

6. A PWM motor driving device comprising:

an upper output transistor connected between a higher-voltage side of a power source and a motor;

a lower output transistor connected between a lower-voltage side of the power source and the motor;

switching means for switching the upper and lower output transistors between ON and OFF according to a signal representing a rotational position of the

5 motor;

controlling means for controlling an amount of electric power supplied from the power source to the motor by controlling an ON/OFF duty factor of the upper and lower output transistors according to a torque control signal;

upper phase detecting means for detecting, among a plurality of phases of

10 the motor, the phase which is currently being driven by the upper output transistor;

upper saturation preventing means for limiting the voltage of the phase detected by the upper phase detecting means below a level above which the upper output transistor is saturated;

lower phase detecting means for detecting, among the plurality of phases of the motor, the phase which is currently being driven by the lower output transistor;

and

lower saturation preventing means for limiting the voltage of the phase detected by the lower phase detecting means above a level below which the lower

20 output transistor is saturated.